SCIENCE & GOVERNMENT REPORT

22nd Year of Publication

The Independent Bulletin of Science Policy

Volume XXII, No. 12 | P. O. Box 6226A, Washington, D. C. 20015 | © July 1, 1992

House Votes a Shut-Down Budget

How DOE's Empty Promises Brought Woe to the SSC

"Contrary to all the hype, the SSC will not cure cancer, will not provide a solution to the problem of male-pattern baldness, and will not guarantee a World Series victory for the Chicago Cubs."

The speaker was Rep. Sherwood Boehlert (R-NY), wise-cracking, persistent tormentor of the Superconducting Super Collider, parodying the claimed benefits of the colossal particle accelerator. The place was the floor of the House, where the fate of the SSC was nearing a vote at 9:30 pm on June 17, following eight hours of debate.

Though construction was under way, over $1 billion already spent, and thousands of contracts judiciously distributed among 46 states, a political derailment was not unthinkable. Plenty of embarrassing dirt about the SSC's elastic cost estimates and weak management had been turned up recently by an investigating Subcommittee chaired by Rep. Howard Wolpe (D-Michigan), Boehlert's comrade in arms in the anti-SSC campaign. But with so many supporters created by all that money, the magnets designed and successfully tested, buildings rising and dirt dug at the Texas site of the 54-mile accelerator, calamity appeared avoidable.

NIH Director Out on a Limb With AIDS Report "Absolving" Gallo—P. 5

For the fiscal year that begins next October 1, the White House had asked Congress for $650 million for the SSC, as the next installment on what is currently estimated as a total construction cost of $8.2 billion. But in a demonstration of thriftiness, the House Appropriations Committee had voted for only $483 million, freezing the funding at this year's level. Amid nasty exchanges between the Democratic Congress and the Republican White House over which was the bigger wastrel of taxpayer funds, no effort was afoot to countermand the reductions wrought by the Appropriations Committee. Skimpy, but bearable, the frozen budget could be an assist toward passage in a difficult year.

When the votes were counted, however, the SSC was decisively defeated, 232-181. Instead of receiving the $483 million, the project was allotted $34 million in shut-down money. There are precedents for political rejection of a highly rated basic science project—among them the Isabelle accelerator at the Brookhaven National Laboratory, which died of runaway costs. And in the early 1960s, Congress killed the Mohole deep-sea drilling project after it fell into managerial disarray. But these events are extremely rare.

Desperate efforts are under way to salvage the SSC in the Senate, where the Appropriations Committee will take up the DOE money bill, at a date as yet unspecified, after Congress returns July 17 from a recess. But rescue would require a reversal of that weighty negative vote in the House, a chancy prospect, given the potency of the two main ingredients in the defeat: A willingness to sacrifice the SSC as a shocker symbol of Congressional determination to restrain spending, and revulsion toward the financial deceptions employed by the Department of Energy, initially to sell the project to Congress and later to dispel rising doubts.

The vote, it should be noted, came just a week after the

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In Brief

The Department of Health and Human Services does not hasten to accommodate NIH Director Bernadine Healy on matters important to her that require its approval. Six months ago, Healy proposed a high-command shuffle at NIH, elevating Jay Moskowitz to Deputy Director, from his present post as head of the Office of Science Policy and Legislation. She also nominated Associate Director of Administration John D. Mahoney for Deputy Director for Management and Budget. HHS, which bucked back Healy's Strategic Plan as a budget-busting gambit in February, is still thinking about the personnel appointments, now filled on an acting basis.

Abolished in a government economy move after 26 years as Canada's major science-policy think tank, the Science Council of Canada closed up shop on June 26. Its publications, including 15 recently completed studies of various industrial sectors, plus a major report on agriculture, are available from: Canada Communication Group—Publishing, Ottawa, Canada K1A 0S9; tel. 819/956-4802.

NSF and NIH have signed a memorandum of understanding for the two agencies to collaborate on three minority education programs originated by NSF. The Foundation, which is teeming with Congressional dollars for education, has also entered into a collaborative understanding with the Department of Education, thus possibly ending education's own lingering version of the cold war. The inter-agency pacts were negotiated under the auspices of the Federal Coordinating Council for Science, Education, and Technology, chaired by White House Science Adviser D. Allan Bromley.

. . . SSC Opponents Cite Past Promises of Foreign Aid

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House, in a display of theatrical agonizing, narrowly rejected a Constitutional amendment to require a balanced budget. The SSC appropriation chanced along at a moment when a heartrending demonstration of frugality fit in nicely with the political mood and the electoral needs of many members.

The proper place of the SSC in national science priorities was also addressed—high or low, depending on the attitude of the particular legislator. But Congress's incapacity to judge scientific value was frankly conceded by an SSC supporter, the Republican Minority Whip, Newt Gingrich, of Georgia. Only peripherally involved in the debate, Gingrich said "there is not a single person in this body who has the scientific background to know for sure whether this is the greatest investment ever or the worst investment." Nonetheless, he urged support of the SSC as a sign to the world of America's commitment to scientific superiority. Then Gingrich sat down and said no more. But opponents of the SSC were quick to point out that a study by DOE itself had rated the SSC low among the projects supported by the Department.

From the outset of the debate, it was clear that the SSC camp realized that the project was threatened by a ploy that had once assured its political success: The backers' repeated assurances that other countries would help pay the bills. In 1987, when DOE Secretary John S. Herrington announced his Department's support for the project, he soothed away concerns about costs with a confident assertion that foreign sources would contribute "a quarter to 50 percent of this project." Events proved there was no basis in fact for that statement. But the imminence of foreign aid became a constant in the politics of the SSC.

The Reagan Administration later locked itself into a commitment to obtain one-third of the costs from non-federal sources, meaning most of it from abroad, an arrangement endorsed by the Bush White House. The assurances of foreign money were accompanied by pledges that the SSC would not be permitted to impinge on DOE's support of basic research.

However, virtually nothing has been obtained from abroad, despite several appeals to Japan—the only potential source of big money—by Bush himself and an assortment of US government officials. All of them have repeatedly assured Congress that substantial foreign help will inevitably arrive, but it hasn't, a fact regularly thrown at Administration witnesses when they come to Capitol Hill to report on the SSC. With deficit demagoguery rampant in this Congress, the SSC's backers arrived at the June 17 budget debate with an amendment designed to deal with the embarrassing absence of the long-promised foreign assistance.

Introduced by Rep. George Brown (D-Calif.), Chairman of the Science, Space, and Technology Committee, the amendment simply stated that no more money could be spent for the SSC after June 1, 1993, unless the President certified that "commitments for contributions from international sources meet or exceed $650,000,000 for fiscal years 1993, 1994, and 1995." Actually, even with Texas providing a $1-billion sweetener, the SSC requires at least $1.7 billion from abroad to meet the requirement of one-third of the cost from non-federal sources. In setting a goal of $650 million in foreign funds, Brown and company apparently were proceeding on the principle of one step at a time.

The Brown amendment, similar to one passed by the House two years ago, but ignored by the Senate, represented a bold gamble, since there's no reason to believe that foreigners will ante up or even promise $650 million by next June. But passage of the amendment would serve several purposes: It would prod the White House to intensify the quest abroad; demonstrate confidence that foreign money is really to be expected, and cast Japan as savior or killer of the project, thus putting heat on Tokyo to deliver cash.

Furthermore, if the cut-off proposal helped nudge Congress toward another annual helping of money for the SSC, the project would move even closer to the magic point of no return, when it could be pleaded that too much has been spent to turn back now. That argument might be persuasive even if June 1993 came and went without a financial lifeline from abroad. The SSC didn't get so far without a good deal of high political craft at its service. Chairman Brown is experienced as a savior of science and technology from politics, having quarterbacked last year's resurrection of the Space Station after the House Appropriations Committee decreed its termination.

Addressing the House, Brown confessed to some personal concerns about the effects that an SSC unaided by foreign money might have on other DOE science projects. But he assured his colleagues that his cut-off amendment would take care of the problem. "Now, I'm not proposing this amendment as a fig leaf to cover up anything, as some have asserted," Brown insisted. "I am confessing to you that I have my own qualms about whether we can continue

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Independently published by Science & Government Report, Inc., twice monthly, except once each in January, July, August, and September. Annual subscriptions: Institutions, $358.00 (two years, $610.00). Bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. NW, Washington, DC 20015. Tel. (202) 244-4135. For subscription service: PO Box 6226A, Washington, DC 20015. Tel. 1-800-522-1970; in Washington, DC 785-5054. Reproduction without permission is prohibited. SGR is available on University Microfilms International. Claims for missing back issues will be filled without charge if made within six weeks of publication date. ISSN 0048-9581.

. . . Wolpe Inquiry Turns Up Embarrassing DOE Letter

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to fund this project. At this point, I think we can," he said, "if we get those foreign commitments."

Wolpe, leader of the anti-SSC contingent, replied that the amendment is so irrelevant to the problems afflicting the SSC, that SSC opponents can support it. Ironically, Wolpe's ability to whack the SSC can be directly attributed to a decision made by George Brown when he became Chairman of the House Science Committee last year. Determined to make that wobbly body a power in the House, Brown asked Wolpe to move from the more prestigious Foreign Affairs Committee to the Chairmanship of the Science Subcommittee on Investigations and Oversight. To wide surprise, Wolpe accepted, and undertook a penetrating investigation of the SSC's cost estimates and management.

Working closely with Wolpe was Boehlert, the top Republican on the Subcommittee, who had long been fuming over DOE's rejection of his proposal to site the SSC on the US-Canadian border—not in his district, nonetheless in his home state of New York. Boehlert caustically noted that though DOE had dubbed the SSC an "international" facility, it nonetheless insisted on siting it inside the US.

Drawing upon the findings of his inquiries, Wolpe told the House that DOE was playing a devious game in regard to foreign contributions. Contracts for components were being placed in South Korea, China, and other low-cost countries without competitive bidding, Wolpe said, and the savings from their bargain-rate prices were computed as "foreign contributions." He added that "there is nothing in this amendment that would provide a hard and fast definition to prevent that kind of abuse of the foreign-contributions provision."

He was seconded by Boehlert, who said, "The amendment is just a make-me-feel-better amendment. It does not have any real substance."

Rep. Tom Bevill (D-Ala.), Chairman of the Appropriations Subcommittee that approved the SSC budget, countered that killing the SSC would eliminate 7000 jobs. Boehlert replied that the demands of the SSC would cost jobs at high-energy physics centers throughout the country. Brown interjected that the Appropriations Subcommittee had cut $160 million from the requested SSC budget to assure funding for the other major centers. He conceded, however, that "They have not cut SLAC, but they may have to in the future, if we do not get a funding commitment from foreign sources." Brown added that "there are no new starts [for major physics facilities] being funded, and in today's budgetary situation, there probably will not be for a number of years."

Brown's amendment was passed on a voice vote, and the House shortly afterwards turned to the deadly business of the day, an amendment by Rep. Dennis Eckart (D-Ohio) to eliminate all but $34 million in shut-down funds for the SSC. Drawing upon the financial record dug up by Wolpe's investigations, Eckart keyed his opposition to the season's number one topic on Capitol Hill: money. Noting the steep climb of the SSC's cost estimates since 1983—from $3.9 billion to an internal DOE calculation last year of $11.2 billion—Eckart declared that "the cost is simply out of control."

He backed the assertion with a letter that Wolpe had commandeered from DOE's files, written in January by the then-Deputy Secretary of Energy, W. Henson Moore. The letter, to Roy Schwitters, Director of the SSC project, stated, in part, "I have learned that the overrun problems are continuing and may even be getting worse." The letter went on to warn, "I intend to instruct our attorneys to examine our contract to see what remedies are available to the Department."

Referring to the hometown Congressman of the SSC, Rep. Joe Barton (R-Texas), Eckart recalled that in last year's debate on the SSC, Barton said "he fully expected $1 billion from the Japanese in support." While the money has not appeared, Eckart continued, the costs continue to rise. Whereas $500 million had been budgeted for two detectors for the SSC, he said, "The first one has come in at $720 million, and they have given up trying to build the second one."

Following the recent debate over the balanced-budget amendment, Eckart said, "we have an opportunity to put our votes where our voices were last week." Eckart wound up by declaring that the SSC "commits suicide by failing to be honest with us and with the taxpayers as to how much it will cost. It commits its own suicide when it proposes to rob from other important laboratories...."

Barton, the SSC's own Congressman, attempted to control the damage. Moore's letter, he said, should inspire confidence, because "the Super Collider laboratory officials immediately replied. They had a meeting in Houston within a week of receiving the letter" and Moore "signed off on the plan that the laboratory presented to correct the problems identified in the letter."

Regarding the long-ago cost estimate of $3.9 billion, Barton said, "I would simply point out that those were generic estimates in the mid-eighties, before a site had been chosen and before the project had been engineered." The current estimate, $8.2 billion, he insisted, is realistic. And he assured the House that foreign money—$1.7 billion of it, he declared—is on the way. "I am confident that between now and next June, you will see the Secretary of Energy, the Secretary of State, and the President of the United States initial and bring forward agreements that will meet that commitment."

But Barton was in a difficult position, having been among the leaders of the move to add a balanced-budget amendment to the Constitution. "The gentleman from Texas is obviously a contortionist, being on two opposite sides of fiscal policy at the same time," said Rep. Lawrence J. Smith

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. . . Energy Dept. Study Gave SSC a Low Priority

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(D-Fla.), adding, "The problem is, Mr. Chairman, very few of us can be that contradictory, physically or politically." Joshing at Barton's assurance that foreign help would arrive, Rep. Eckart noted the many previous promises, and said: "I want to see cash money on the barrel head. The fact of the matter is we have none."

Rep. James Sensenbrenner Jr., a Wisconsin Republican, joined in with a recitation of the SSC's failure to stick to the original estimates and obtain foreign money. If the SSC survives, he said, "every member will be able to get less money for less costly science in their own States and their own Districts, and we will send more and more money to Texas for the Super Collider."

Chairman Brown of the Science Committee returned to the debate, explaining that Europe had no money to spare from its own high-energy physics program. "We are looking," he explained, "to the have-nots of the world of high-energy physics, which basically means the newly rich countries of Asia—Japan, Korea, Singapore, and other countries in that area. We think that what they are waiting for—and I know the negotiations have been long and drawn out—is an indication that the United States knows what it is doing and is going to continue."

Wolpe, loaded with material from months of staff examinations of DOE files, spoke with a detailed knowledge of SSC affairs that could not be ignored. In a DOE assessment of scientific merit of its research programs, he said, "the Super Collider came out 10th of the 11 programs, and the [DOE] Office of Policy [Planning and Analysis] recommended it be deemphasized in the Department's funding request. Yet today, the SSC ... commands over one-fourth of the Department of Energy's entire science budget in the President's fiscal 1993 budget request, and is allocated almost 80 percent of the entire high-energy physics budget...."

Accusing DOE of deception in dealing with Congress, Wolpe told of having to resort to threats of a subpoena to obtain DOE records of the SSC's financial difficulties that, by statute, are supposed to be available to his Investigations and Oversight Subcommittee. To conceal the records, he said, DOE had set up a "back channel" of communications between Washington and Texas. The Department finally delivered the records, Wolpe said, but only under severe pressure.

He added, "We have had reports from the Inspector General of the Department of Energy, and we have had testimony from the General Accounting Office, identifying in pretty ugly detail, frankly, the mismanagement of this project."

The spin-off argument, often made in behalf of the SSC, was disputed by Rep. Dan Glickman (D-Kansas), who noted that SSC proponents had claimed magnetic resonance imaging and other technologies as products of high-energy physics research. He said that the claim has been disputed by Nicolaas Bloembergen, Harvard Nobel laureate physicist and 1991 President of the American Physical Society, who told a Senate hearing, Glickman reported, that "As one of the pioneers in the field of magnetic resonance, I can assure you that these are spinoffs of small-scale science, not of the SSC, and the attribution of the SSC to the other spinoffs mentioned is highly questionable."

Chairman Bevill of the DOE Appropriations Subcommittee warned that cancellation of the SSC "would create chaos. We have some 18,000 contracts. We have some 100 universities in over 30 states that are already involved in this program." The shut-down costs would more likely be $180 million, rather than the $34 million provided in the bill before the House, he said. The chaos warning was ignored, neither echoed nor disputed.

Boehlert said he doubted that "anyone believes that the most pressing issues facing the Nation include an insufficient understanding of the origins of the universe, a deteriorating standard of living for high-energy physicists, or declining American competitiveness in the race to find elusive subatomic particles, yet these are the concerns the SSC hopes to address." He added that "This project only involves $484 million this year. Billions more will be asked for year after year, and then if the project is ever completed, it will cost $500 million a year to operate it."

The SSC as scientific inspiration for youth was proposed by Rep. Marilyn Lloyd (D-Tenn.), who described the SSC as, among other things, "an investment in our schoolchildren."

But Rep. Joe Hefley (R-Colorado) said that the SSC's proponents had failed to rouse his interest in the project. Hefley, a member of the Science Committee, said that when D. Allan Bromley, the President's Science Adviser, testified about the SSC, he told Bromley, "Excite us about this. So, like the Apollo Program, we can go and tell the people we represent why we are spending $4 billion of their dollars for a project like this."

The Congressman continued: "We spent three days in hearings, and I guarantee you not he or any of the scientists excited us one iota about this project. I asked him what do you hope it will do. He could not tell me. They could not define what. He said it was pure science. It is pure science and it will discover things. He could not tell me what it would do."

Hefley went on: "Finally, he [Bromley] summed it up by saying, 'Well, if we don't do it, the Europeans will do it.' And I guess I would have to say," the Congressman told the House, "Let them do it. I mean we cannot do everything. We cannot do space station and everything else. Let them do it. We will steal their technology like they steal our technology. Let them develop something and put out the money for it if it is so important."

As the time for the vote approached, Rep. Barton got in

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Gallo Case: New Scrutiny and Cancelled Appearance

NIH Director Bernadine Healy appears to have situated herself far out on a frail limb by endorsing her agency's investigative report exonerating Robert C. Gallo of misrepresenting his role in the development of the AIDS blood test. "Dr. Gallo was absolved of allegations of scientific misconduct by the [NIH Office of Scientific Integrity] investigation," Healy advised Assistant Secretary of Health James O. Mason in a March 27 letter stamped "confidential."

But since then, the findings have been thrown into question by a critique of the NIH conclusions, prepared by an investigator forced off the case last year by Healy, Suzanne Hadley, who recently has been assisting Rep. John Dingell's inquiry into the Gallo case. Hadley's analysis of the case is currently under review at HHS, and a decision on whether to accept NIH's verdict on Gallo has been put off for several months.

Gallo was scheduled to appear on June 24 at a meeting of a subcommittee of the National Cancer Advisory Board (NCAB) at NIH and answer previously submitted questions on the AIDS controversy. Extensively publicized to the press, the meeting was billed as Gallo's first public response to the questions of integrity that have swirled about him for years, even before an investigative report in 1989 by John Crewdson of the *Chicago Tribune* led to a formal inquiry by NIH.

However, the NCAB meeting was cancelled by NIH on short notice, without meaningful explanation. The intervening factor appears to have been an announcement from Washington representatives of the Pasteur Institute that they would be on hand at NIH after Gallo's appearance to present a statement and answer questions. Late in the afternoon of the day prior to Gallo's scheduled appearance, NIH called off the meeting, explaining only that it was acting "Upon direction of the General Counsel" of its parent agency, the Department of Health and Human Services. Pasteur claims priority in the identification of the AIDS virus and it wants all rather than the present 50-50 split of an anticipated $50 million in blood-test royalties. Gallo and several colleagues have each been receiving royalties of $100,000 a year, with the balance of the US share going to the government.

Meanwhile, HHS is studying Hadley's critique, which described NIH's report on the Gallo case as "a deeply flawed document reflecting an incomplete investigation." The NIH draft report endorsed by Healy acknowledged that the investigators were not unanimous in clearing Gallo. His exoneration has been criticized as unjustified by at least one of the academic specialists summoned to assist the NIH staff.

On June 3, following publication of excerpts from Hadley's assessment in SGR [June 1, "Report 'Absolving' Gallo Draws Strong Rebuttal"], Mason's chief for misconduct matters, Lyle W. Bivens, asked Dingell's staff to help him review the NIH report. The request was accompanied by 32 questions derived from Hadley's critique. Bivens heads the Office of Scientific Integrity Review, which advises Mason on misconduct findings.

Clearly infuriated by Hadley, who has been on medical leave since March 2, NIH has formally directed her to shut up. In a letter on June 8 from Bonnie R. Kalberer, Acting Director of the NIH Office of Science Education Policy, Hadley was told that "you may not make statements to or appear before the media regarding matters relevant to the NIH unless any such activities are cleared in advance by me or my supervisor, Dr. Jay Moskowitz." Healy had previously asked the FBI to investigate Hadley's role in leaks of information from NIH misconduct studies, but the Justice Department declined that assignment as unwarranted.

The NIH gag order specifically referred to statements by Hadley reported in *Chemical & Engineering News* of May 11 and a report in *Science* of May 15 stating that Hadley is "now working part time for Representative Dingell..." It also noted that she has appeared on the TV program *Prime Time*.

HHS's nervousness about the Gallo case has been compounded by damaging statements by a former HHS official who was there when Gallo reaped glory as the discoverer of the AIDS virus, C. McClain Haddow, HHS Chief of Staff from 1983-87. Haddow's credibility is sullied by the fact that, in a matter unrelated to the Gallo case, he was convicted of violating federal conflict of interest regulations and imprisoned for four months. But his account of the Gallo affair has received a good deal of attention lately, with

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Supercollider

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his final words, pointing out that the SSC accounted for only a tiny portion of federal spending on science and technology—$243 million out of $16.5 billion in fiscal 1991. The $650 million originally sought by the President for the SSC next year amounts to 3.5 percent of the space, science, and technology budget, he said. He emphasized that, apart from the SSC, government funds for civilian science have steadily increased in recent years. "We are not gobbling up the science budget to build the SSC," Barton declared.

Minutes later, the House voted to kill the SSC, 232-181.

The first step to a revival would be a favorable vote in the Senate—possible, but by no means certain. If it occurs, next comes an extremely difficult part, persuading the House to reverse a drastic decision adopted by a strong majority. When the budget debate began, it was widely believed that the SSC had bought a constituency that assured its survival. Even some of its most outspoken opponents conceded that their opportunity had passed.

But now there's a real chance that Waxahachie, Texas, will be the site of one of the most puzzling ruins on the American landscape.—DSG

. . . Gallo Claims Doubted in '84, Ex-HHS Aide Says

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reports appearing in the *New York Times* of June 25 and in a BBC production on the case, "Taking the Credit."

The *Times* report states that "Mr. Haddow now says that from the beginning some top HHS officials had doubts about Dr. Gallo's account [of the discovery of the AIDS virus]."

In the BBC production, Haddow states, "Well, the determination we finally came to after investigating it was that Bob Gallo, as strong as he was on his views, couldn't support the claims he was making from a legal standpoint. And so our attorneys recommended, the Department attorneys, perhaps in some conflict with the NIH attorneys, recommended that we fold, that we roll over but play it out until we saw how strong the French were on it.... The French attorneys ... didn't know how weak our case was and they never discovered it. So we were able to craft an agreement that probably disadvantaged the French, but it was because we hid our weakness fairly effectively. We felt in a political sense that it was important for President Reagan to show that he had an interest in the AIDS problem.... Reagan had a growing problem of insensitivity to people who had this affliction of AIDS..."

Mason's personal knowledge of the AIDS controversy goes back a long way, to the days when an AIDS rivalry existed between NIH and the Centers for Disease Control, which Mason then headed. His involvement in the Gallo investigation comes with the job of Assistant Secretary for Health, but an element of personal interest may be there, too.

On April 23, 1984, HHS Secretary Margaret Heckler held a press conference, at which she announced that the AIDS virus had been identified. She credited Gallo, who was present, with the discovery. However, in a page one article published a day earlier, Lawrence Altman, a physician-medical writer for the *New York Times*, reported on an interview with Director Mason of the CDC. The article was a precursor to Heckler's already scheduled press conference—and, in substance, was directly at odds with the announcement Heckler planned to make.

Mason, the article reported, "said today that he believed that a virus discovered in France was the cause of acquired immune deficiency, or AIDS.

" 'I believe we have the cause of AIDS, and it is an exciting discovery,' Dr. Mason, who is a virologist, said in an interview today. 'The public needs to know that this is a breakthrough and that it is significant.' "

The *Times* article continued: "Dr. Mason said he based his opinion on findings made in recent weeks by the researchers who discovered the virus at the Pasteur Institute in Paris last year. Dr. Mason said his opinion was also based on additional findings by scientists at the disease centers here and at the National Institutes of Health in Bethesda, Md."

Referring to the French designation for the virus, LAV, the article stated: "It was not until last winter, after members of the French team visited researchers in this country and presented findings at a meeting in Utah, that American scientists, many of whom had been working with the LAV virus, became enthusiastic about its role in AIDS, Dr. Mason said."—DSG

Job Changes & Appointments

Nominated by the President for the National Science Board, 24-member policymaking body of the National Science Foundation, and awaiting Senate confirmation, are three reappointees: ***F. Albert Cotton***, Professor of Chemistry, Texas A&M University; ***James L. Powell***, Chief Executive Officer, Franklin Institute, Philadelphia; ***Frank H.T. Rhodes***, President, Cornell University.

The White House also nominated three first-time Science Board members: ***Charles E. Hess***, Professor of Agriculture and Environmental Sciences, UC Davis; ***John Hopcroft***, Professor, Department of Computer Sciences, Cornell University; ***Richard Neil Zare***, Professor of Chemistry, Stanford University.

Marta Cehelsky, who has held various senior policy positions at NSF, has been appointed Executive Officer of the National Science Board, succeeding ***Thomas Ubois***, who has been named Senior Staff Associate in the NSF Directorate for Education and Human Resources.

Also at NSF, ***Alan M. Gaines***, Head of the Research Grants Section in the Division of Earth Sciences, has been appointed Assistant to the NSF Director for Science and Technology. He succeeds ***William Harris***, who has been appointed to head the Directorate for Mathematical and Physical Sciences.

Stuart Rosenfeld, Director of the Southern Technology Council, Research Triangle Park, NC, one of the most active prosperity-through-technology organizations in the country, has resigned to form his own consulting firm, RTS, Inc. The Council serves as an advisory body to the Southern Growth Policies Board, whose Executive Director, ***Juliann Tenney***, is serving as Acting Council Director.

Christopher Hill, a Program Officer at the National Academy of Engineering, has been named Staff Director of the Manufacturing Subcommittee of the Competitiveness Policy Council, a federal advisory committee created by the 1988 Omnibus Trade Act. Hill will stay on at the Academy while handling the new assignment.

James M. McCullough, Director of the Program Evaluation Staff at the National Science Foundation, has been detailed to the White House Science Office as staff chief for a major study of the health of universities to be conducted through the President's Council of Advisers for Science and Technology and the Federal Coordinating Council for Science, Education, and Technology. The study is a follow-up to a Reagan-era report produced by now-Presidential Adviser D. Allan Bromley and David Packard. It was ignored.

More IN PRINT: Lab Animals, Space Debris, Census

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Recognition and Alleviation of Pain and Distress in Laboratory Animals (137 pp., $29.95, plus $3 for shipping), from the National Academy of Sciences Committee on Pain and Distress in Laboratory Animals, in collaboration with the Institute of Laboratory Animal Resources, an Academy offshoot founded in 1952 to provide advice on use of laboratory animals. Citing federal animal welfare regulations and policies of the American Association for the Accreditation of Laboratory Animal Welfare Care, the introduction states that the volume's purpose is "to increase awareness of the sources and manifestations of stress and distress in laboratory animals and to increase ethical sensitivity in those who use and care for them." Noting that pain can "increase variability in experimental data," it adds that control of pain might reduce the number of animals required for experimental purposes. Chapters include: "The Basis of Pain," "Recognition and Assessment of Pain, Stress, and Distress," "Control of Pain," and "Euthanasia."

Also available, a related volume published last year by the Academy: ***Education and Training in the Care and Use of Laboratory Animals: A Guide for Developing Institutional Programs*** (paperbound, 152 pp., $9.95, plus $3 for shipping; reductions for multiple copies).

Order from (checks payable to): National Academy Press, 2101 Constitution Ave. NW, PO Box 285, Washington, DC 20055; tel. 1-800/624-6242; in Wash., DC area: 202/334-3313.

Guidelines for Developing Spacecraft Maximum Allowable Concentrations for Space Station Contaminants (113 pp., no charge), prepared for NASA by the National Academy of Sciences Committee on Toxicology, in preparation for Space Station Freedom going into operation in the mid-1990s, with crews living on recycled air and water in a sealed environment for as long as 180 days. "Several hundred chemicals are likely to be found in the closed atmosphere of the space station, most in very low concentration," the report states. It adds that experiments performed on board might release contaminants and that "the water reclamation system has the potential to introduce novel compounds into the air." Reassuringly, the report states that on the basis of studies on the combustible contents of flatus (hydrogen and methane), "it seems unlikely that, in the sizeable space planned for the space station and with functional environmental controls, concentrations of these compounds would be high enough for risk of explosion." The report was prepared by a Subcommittee of the Committee on Toxicology, chaired by Donald Gardner, ManTech Environmental Technology, Inc., Research Triangle Park, North Carolina. SGR is advised the printed copies are gone, but duplicated versions will be provided on request.

Order from: National Academy of Sciences, Committee on Toxicology, 2101 Constitution Ave. NW, HA-354, Washington, DC 20418; tel. 202/334-2387.

Space Station: Delays in Dealing with Space Debris May Reduce Safety and Increase Costs (GAO/IMTEC-92-50; 20 pp., no charge), by the General Accounting Office (GAO), which was asked by Rep. Barbara Boxer (D-California) to examine NASA's plans for shielding the Space Station against space debris, recently tallied at "3.5 million small objects, 126,000 mid-size objects, and roughly 14,000 large objects." NASA's preparations for the risks of debris are pretty poor, says the GAO. Noting that an aspirin-size aluminum particle orbiting at 22,000 mph strikes with "the impact of a 400-pound safe going 60 mph," the GAO estimates that at least 140,000 particles that size or larger are in orbit. The report says NASA has concentrated on designing against the small stuff but has neglected the "capability of warning or protecting the crew from imminent collision with mid-size debris." Some capability exists for maneuvering away from large debris, the report states, but it adds that NASA lacks "collision-avoidance plans and debris-tracking requirements."

Also from the GAO: ***Decennial Census: 1990 Results Show Need for Fundamental Reform*** (GAO/GGD-92-94; 71 pp., no charge), in harmony with widespread criticism of the accuracy and techniques of the 1990 census, the GAO says "the American public has grown too diverse and dynamic to be accurately counted solely by the traditional 'headcount' approach," adding that errors and costs in 1990 were up, while public cooperation declined. The Bureau of the Census and its parent agency, the Department of Commerce, appear to recognize the problems, the GAO states. But it adds, "To be successful, the census reform effort must ensure that the Bureau's conservative approach to planning the 1990 census is not replicated in planning for 2000."

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

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IN PRINT: Future of Science, Defense Industries, Etc.

The publications listed are obtainable as indicated—not from SGR.

From the National Academy of Sciences Government-University-Industry Research Roundtable, a gathering place for weighty policy discussions, three related publications (available without charge):

Future National Research Policies Within the Industrialized Nations (106 pp.), papers, questions, and answers from a symposium in February 1991, with a cast of top R&D officials from the European Community, US, UK, Germany, Japan, and the Soviet Union.

Fateful Choices: The Future of the US Academic Research Enterprise (58 pp.), "Discussion Paper" for a conference in December 1991, organized by a group of researchers and academic administrators chaired by former NSF Director Erich Bloch.

The Future of the US Academic Research Enterprise (11 pp.), a summary of the December 1991 conference.

All three documents are strewn with banalities characteristic of these somber pow-wows on the fate of science, e.g., "The research enterprise of the future will be unlike the one of today. Significant opportunities and challenges can be expected in the decades ahead." But the chaff is accompanied by a sprinkling of trenchant observations, ranging from the costly immortality of government labs that have outlived their missions to the silent shift that has taken place in the funding of academic science—from 31 percent non-federal in 1970 to 41 percent in 1991.

Order from: National Academy of Sciences, Government-University-Industry Research Roundtable, Room 340, 2101 Constitution Ave. NW, Washington, DC 20418-0001; tel. 202/334-3486.

Lessons in Restructuring Defense Industry: The French Experience (GPO Stock No. 052-003-01286-3; 35 pp., $2.25), from the Congressional Office of Technology Assessment (OTA), notes that France preceded the US by a few years in shrinking its military establishment, leading OTA to seek lessons that may be useful for the US. Whether lessons are there is another matter, given that the French defense budget is one-tenth that of the US, its military industries are mainly government-owned, and one-third of production is sold abroad. Scratching for lessons, OTA warns that arms sales can intrude on foreign policy interests and impede technological advances when sales decline. In a muddy finale, the report states that "France has managed defense R&D and procurement to preserve a broad-based national defense industry for the future, but at some cost to its current military capability. In contrast, the United States has managed defense R&D and procurement to obtain the best current military capability, but at some cost to the long-term health of its defense-industrial base." *C'est la vie.*

Order from (checks payable to): Superintendent of Documents, USGPO, Wash., DC 20402-9325; tel. 202/783-3238.

SGR Summer Schedule

The next issue of *Science & Government Report* will be published August 1, 1992.

The Quality of Undergraduate Science Education (No. 105; 183 pp., no charge), testimony, discussion, and supplementary material from hearings March 31 before the Science Subcommittee of the House Science, Space, and Technology Committee. Eight witnesses, all from universities, were heard, including Charles Vest, President, MIT; Pamela Ferguson, President, Grinnell College, and Homer Neal, Chairman, Department of Physics, University of Michigan. The hearing was lively at times, as, for example, when Ferguson observed, "If we are serious about improving undergraduate science education, you have to give more than seven percent of the NSF's budget to changing curriculum, to instrumentation, because otherwise you are sending a mixed message to a very smart group of people."

Also from the House Science Subcommittee: ***The National Science Foundation*** (No. 111; 240 pp., no charge), annual hearings, February 25 and March 2, on the NSF budget (for fiscal 1993, starting next October 1), with testimony from academics, professional society representatives, and NSF Director Walter Massey. The customary fencing between legislators and Executive officials is evident here, including Massey's written response to a statutory mandate to provide Congress with a three-year budget estimate for NSF. Massey explained that the estimates "reflect a government-wide policy to show nominal freezes in budget authority between 1993-1997." Beginning with the sum requested for FY 1993, $3.027 billion, Massey estimated FY 1994 at $3.027 billion, and then proceeded to FY 1995, for which he estimated $3.027 billion.

Order from: US House of Representatives, Committee on Science, Space, and Technology, Subcommittee on Science, Room 2320 Rayburn Building, Washington, DC 20515; tel. 202/225-8844.

Space Business Indicators (GPO Stock No. 1992-311-897:60245; 54 pp., price not available), from the US Department of Commerce, latest in an annual series that dates back a couple of years, says that US space-related business is robust, and offers several down-to-earth illustrations: 1992 sales of satellites and launch vehicles will total "over half a billion dollars—or the equivalent of 60,000 imported cars." And space commerce in the US will total $5 billion, a sum "roughly equal to US movie theater receipts." Included are data on gross aerospace revenues, employment, federal and industrial funding, satellite sales, launches accomplished and scheduled, etc.

Order from (checks payable to): Superintendent of Documents, USGPO, Washington, DC 20402-9325; tel. 202/783-3238.

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